

REMARKS

Claims 2-15 and 17-19 are pending in the application.

By the foregoing Amendment, claims 2-15, 17, and 18 are amended. Claim 1 is canceled without prejudice or disclaimer. New claim 19 is added.

New claim 19 replaces claim 1, and more precisely defines the invention. Claims 2-15, 17, and 18 are amended for conformity with new claim 19, and for better conformity with U.S. practice.

These changes are believed not to introduce new matter, and entry of the Amendment is respectfully requested.

Based on the above Amendment and the following Remarks, Applicant respectfully requests that the Examiner reconsider all outstanding rejections, and withdraw them.

Rejection under 35 U.S.C. § 112, ¶2

In paragraph 2 of the Office Action, claims 1-12 and 17 were rejected under section 112, paragraph 2 due to lack of clarity. This rejection is believed to be overcome by the cancellation of claim 1, its replacement by new claim 19, and the conforming amendments to the claims depending therefrom.

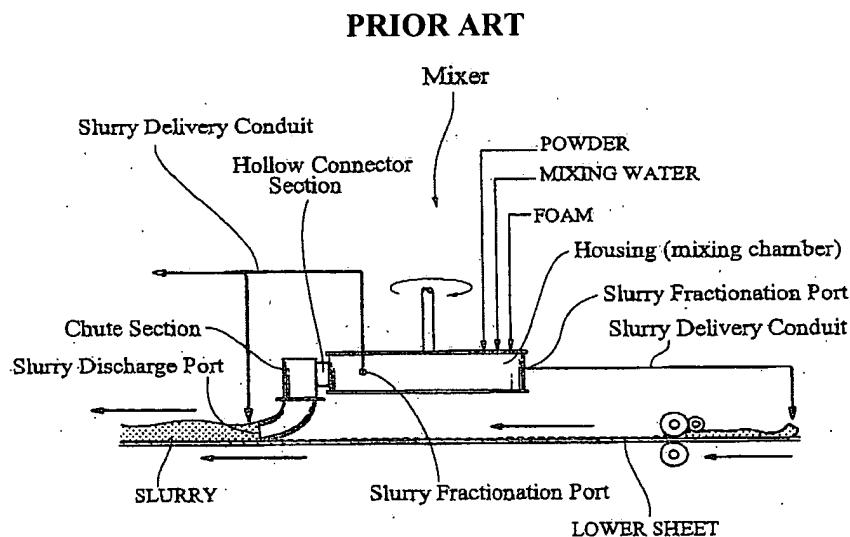
Introductory Comments Regarding the References

The following references are cited in the Office Action:

1. US 5,714,032 (Ainsley et al.)
2. JP 08-112808 (Japan 808)
3. US 6,193,408 (Miura et al.)

4. WO 93/03899 (Bold)*
5. US 5,683,635 (Sucech et al.)
6. US 6,878,321 (Hauber et al.)
7. US 6,190,476, (Seecharan et al.)

The mixer in each of the above listed references has a fractionating device or system with a conventional arrangement (prior art) as discussed in paragraphs [0006] - [0007] and as shown in Figure 12 of the present application, wherein the fractionation port(s) is provided directly on a housing or casing of the mixing chamber, as shown in the drawing below:



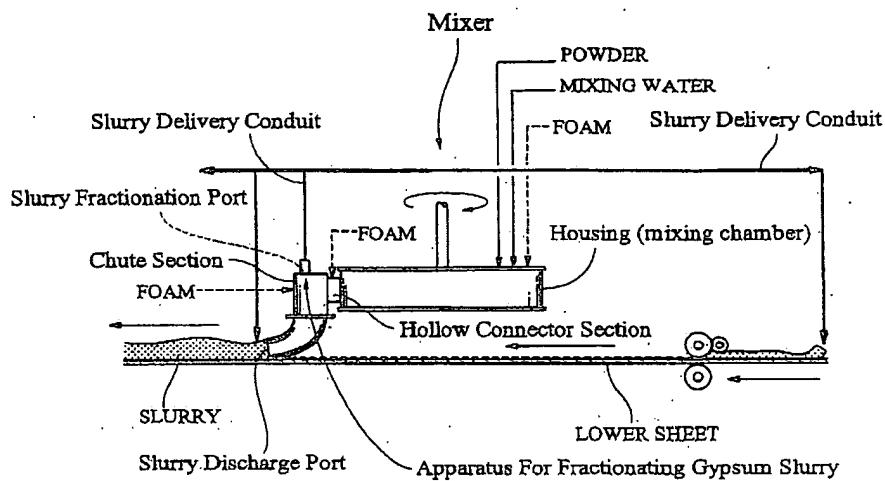
The prior art-type fractionating device encounters the following drawbacks:

- a) difficulty controlling the density of the gypsum slurry to be fractionated from the mixer;
- b) unexpected change or unstable condition of the flow rate of the fractionated slurry and
- c) increase of the consumption of foam or foaming agent.

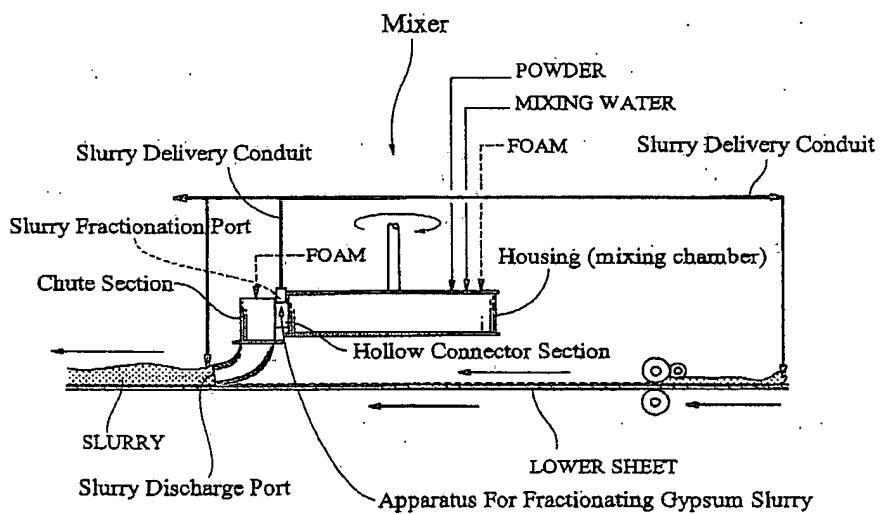
* Bold is incorrectly listed in the Office Action as WO 93/0389, it is noted that WO 93/03899 is a counterpart of CA211C132, which was listed on the Form 1449 submitted by Applicant and initialed by the Examiner.

On the other hand, with reference to the drawings below, the claimed apparatus has the slurry fractionation port disposed on at least one of the chute section (5) and the hollow connector section (50). Therefore, it is possible to surely control density of the gypsum slurry to be fractionated from the mixer, restrict the change in the flow rate of the fractionated slurry, and reduce the consumption of foam or foaming agent.

CLAIMED INVENTION



Slurry fractionation port disposed on chute section (5)



Slurry fractionation port disposed on hollow connector section (50)

Rejections under 35 U.S.C. § 102

In paragraph 5 of the Office Action, claims 1, 2, 7, 9 and 10 were rejected under section 102(b) as being anticipated by Ainsley et al. This rejection is believed to be overcome by the cancellation of claim 1, its replacement by claim 19, and the conforming amendments to claims 2, 7, and 9.

The Office Action states that “the slurry fractionation port is defined at the split between pumps 26, 26’ (“valve means”) in Ainsley et al.

In Ainsley et al., the slurry fractionation port is the “outlet 24,” which is not disposed on the “outlet 44” or the “deposition station 46,” but is instead disposed directly on the housing of the “mixing chamber 12.” However, the “outlet 44” and the “slurry deposition station 46” in Ainsley et al. correspond to the “hollow section” and the “chute section” of the present invention, respectively. Thus, Ainsley et al. does not teach or suggest the invention as recited in claim 19 with the slurry fractionation port being disposed on at least one of the chute section and the hollow connector section.

In view of the foregoing, it is respectfully submitted that the invention as recited in claim 19, and claims 2, 7, and 9 depending therefrom, is patentable over Ainsley et al.; and that the rejection should be withdrawn.

Rejections under 35 U.S.C. § 103

In paragraph 6 of the Office Action, claims 1, 4-7, 9, 10, 13, 14, and 17 were rejected under section 103(a) as being unpatentable over Japan 808 (JP 08-112808) in view of Miura et al. (US 6,193,408), and further in view of Bold (WO 93/03899) and Sucech et al. (US 5,683,635); in paragraph 7, claims 2, 3, 8, 11, and 12 were rejected under section 103(a) as being

unpatentable over Japan 808 (JP 08-112808) in view of Miura et al. (US 6,193,408), Bold (WO 93/03899) and Sucech et al. (US 5,683,635), and further in view of Hauber et al. (US 6,878,321); and in paragraph 8, claims 15 and 18 were rejected under section 103(a) as being unpatentable over Japan 808 (JP 08-112808) in view of Miura et al. (US 6,193,408), Bold (WO 93/03899) and Sucech et al. (US 5,683,635), and further in view of Seecharan et al. (US 6,190,476). These rejections are believed to be overcome by the cancellation of claim 1, its replacement by claim 19, and the conforming amendments to the claims depending therefrom.

The mixers of Japan 808 and Miura et al. have the same basic arrangements as that of the claimed invention, wherein the mixer mixes calcined gypsum and water and deposits the gypsum slurry onto the lower paper sheet through the chute section (reference numeral “190” of Japan 808; reference numeral “41” of Miura et al.) However, the mixers of both Japan 808 and Miura et al. are disposed on the housing or casing of the mixing chamber, as illustrated in Figure 12 of the present application.

Bold does not relate to a process and machine for the production of gypsum board, which has a gypsum core covered with sheets of paper for gypsum board liner. Rather, it relates to a process and machine for the production of fiber-reinforced plaster plate, which is not provided with liner sheets of paper and which does not (and cannot) contain foam in the plate. Further, the process and machine for manufacturing the fiber-reinforced plaster plates are significantly different from those for manufacturing gypsum boards. Therefore, Bold does not disclose nor suggest the present invention.

The mixers of Sucech et al., Hauber et al., and Seecharan et al. also have fractionation ports (numeral “44” of Sucech et al., numerals “34” “134” of Hauber et al., numerals “52”, “53”

of Seecharan et al.), which are merely disposed on the housing or casing of the mixing chamber, similar to the mixers of Japan 808 and Miura et al.

Therefore, the references 2-7 do not disclose that the fractionation port is disposed on at least one of the chute section and the hollow section.

According to the present invention, the slurry fractionation port is disposed at the chute section and/or the hollow connector section so as to fractionate the gypsum slurry in the chute section and/or the hollow connector section.

The density and pressure of the gypsum slurry are relatively stable in the hollow connector section and the chute section, which extract the slurry from the mixer to discharge it to the center part of a gypsum board liner paper. Therefore, the slurry can be continuously fractionated in a stable condition with respect to the density and flow rate of the slurry, and control of the density and flow rate of the slurry can be centralized.

In addition, the consumption of the foam or foaming agent can be reduced, since addition of the foam or foaming agent can be effectively performed owing to stability of the density and flow rate of the fractionated slurry. Further, the foam or foaming agent can be added to the slurry in the chute section, after fractionation, as shown in FIGS. 8 and 9. This allows further reduction of the consumption of the foam or foaming agent, since it is possible to avoid loss of the foam resulting from the foam-breaking or defoaming action in the mixer.

Such effects or advantages of the present invention cannot be obtained from the arrangements of the fractionating devices of the cited mixers with the fractionation port(s) being merely provided on a housing or casing of the mixing chamber.

In view of the foregoing, it is respectfully submitted that the invention as recited in claim 19, and the claims depending therefrom, is patentable over the cited prior art; and that the rejection should be withdrawn.

Conclusion

All rejections have been complied with, properly traversed, or rendered moot. Thus, it now appears that the application is in condition for allowance. Should any questions arise, the Examiner is invited to call the undersigned representative so that this case may receive an early Notice of Allowance.

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,

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